CLAIMS

What is claimed is:

1. A method for processing a plurality of discrete events in a processing system having at least one processor, each discrete event comprising a plurality of independent

5   sub-events, said method comprising the steps of:

distributing each discrete event into one of a plurality of segments, each segment comprising a sequence of at least one discrete event to be processed;

initiating each of said plurality of segments to execute concurrently on said at least one processor;

10   for each segment, processing each discrete event contained within said segment sequentially; and

for each discrete event, processing each independent sub-event of said discrete event sequentially and then storing the results of said processing.

15   2. The method of claim 1 wherein said discrete event is a customer account and wherein said step of processing each discrete event comprises determining billing information for each said customer account.

3. The method of claim 1 wherein said discrete event is a customer account, wherein

20   said independent sub-events comprise customer service information and customer calls, and wherein said step of processing each discrete event comprises determining billing information for each customer account.

4. The method of claim 1 further comprising the steps of:

monitoring each of said segments to detect a failure; and

deactivating each of said segments when a failure is detected.

5.   The method of claim 4 further comprising the steps of:

5   re-initializing each of said deactivated segments; and

re-initiating each of said deactivated segments.

6.   The method of claim 1 wherein said discrete events comprise individual events, master events and child events, each master event having a plurality of child events

10   associated therewith, and wherein said step of distributing said discrete events comprises the step of distributing each child event and the master event associated therewith into the same segment.

7.   The method of claim 1 wherein said step of distributing said discrete events

15   comprises the steps of:

determining a number of processors designated for processing said discrete events;

setting the number of segments to equal the number of processors designated if a user override is not set;

setting the number of segments to equal a user selected number of segments if

20   a user override is set;

determining the number of discrete events to be processed; and

allocating each of the discrete events into a segment.

8. The method of claim 7 wherein said step of allocating said discrete events comprises the steps of:

dividing said number of discrete events by said number of segments to determine a segment size and a remainder;

selecting a number of segments equal to the remainder;

incrementing the segment size of each selected segment; and

distributing sequentially into each segment a number of discrete events equal to the segment size for each segment.

9. The method of claim 8 wherein said discrete events comprise either individual events, master events or child events, each master event having a plurality of child events associated therewith and sequentially subsequent to said master event and further comprising the steps of:

i) ordering the segments from a first segment to a last segment;

ii) selecting the first segment to be the current segment;

iii) distributing sequentially into the current segment a number of discrete events equal to the segment size for the current segment;

iii) adding discrete events to the current segment if the last discrete event in the current segment is a child event and the next discrete event to be distributed is also a child event;

iv) subtracting the number of discrete events added to the current segment from the segment size of the next segment in the segment order; and

v) selecting the next segment to be the current segment unless the current segment is the last segment.

15.   The system of claim 14 wherein said system includes a plurality of processors.

16.   The system of claim 14 wherein said discrete event is a customer account and wherein each of said plurality of processors determines billing information for each customer account.

17.   The system of claim 14 wherein said discrete event is a customer account and wherein said independent sub-events comprise customer information and customer calls.

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18.   The system of claim 14 further comprising:

monitoring means for detecting failures in each segment; and

deactivating means for deactivating each of said segments when a failure is detected.

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19.   The system of claim 18 further comprising:

re-initializing means for re-initializing said system; and

re-initiating means for re-initiating said forking means.

20   20.   The system of claim 14 wherein said discrete events comprise either individual events, master events or child events, each master event having a plurality of child events associated therewith and wherein said grouping means groups each child event and the master event associated therewith into the same segment.

21.   The system of claim 14 wherein said distributing means further comprises:

means for determining the number of processors designated and available for processing the discrete events;

means for setting a number of segments to equal the number of processors if a user override is not set;

means for setting the number of segments to equal a user selected number of segments if a user override is set;

means for determining the number of discrete events to be processed; and

means for distributing each of said discrete events into one of said segments.

22.   The system of claim 21 wherein said distributing means further comprises:

means for dividing said number of discrete events by said number of segments to determine a segment size for each segment and a remainder;

means for selecting a number of segments equal to said remainder;

means for incrementing the segment size of each selected segment; and

means for distributing sequentially into each segment a number of discrete events equal to the segment size for each segment.

23.   The system of claim 22 wherein said discrete events comprise either individual events, master events or child events, each master event having a plurality of child events associated therewith and sequentially subsequent to said master event, and wherein said distributing means further comprises:

means for ordering the segments from a first segment to a last segment;

means for selecting the first segment to be the current segment;

means for distributing sequentially a number of discrete events equal to the segment size for the current segment into the current segment;

means for adding discrete events to the current segment if the last discrete event in the current segment is a child event and the next discrete event to be distributed is also a child event;

means for subtracting the number of discrete events added to the current segment from the segment size of the next segment in the segment order; and

means for selecting the next segment to be the current segment unless the current segment is the last segment.

24.   The system of claim 14 wherein said at least one processor comprises a symmetrical multiprocessing system.

25.   The system of claim 14 wherein said at least one processor comprises a massively parallel processing system.

26.   The system of claim 14 wherein said at least one processor comprises a loosely coupled distributed system.

27.   A symmetric multiprocessing computer system for processing a customer billing and invoicing job comprising:

a plurality of processors each of said processors sharing a single copy of an operating system, each of said processors configured to execute a single process at any

10.   The method of claim 1 wherein said step of storing the results of said processing is accomplished by writing the results of said processing to secondary storage.

11.   The method of claim 1 wherein said steps of processing are performed using a symmetrical multiprocessing system.

12.   The method of claim 1 wherein said steps of processing are performed using a massively parallel processing system.

13.   The method of claim 1 wherein said steps of processing are performed using a loosely coupled distributed processing system.

14.   A system for processing a plurality of discrete events, each discrete event comprising a plurality of independent sub-events to be processed, comprising:

distributing means for distributing said plurality of discrete events into one of a plurality of segments, each segment comprising a sequence of at least one discrete event to be processed;

initiating means for initiating each of said plurality of segments at least one processor;

at least one processor for processing said plurality of discrete events by processing each discrete event with each segment sequentially and by processing each independent sub-event within each discrete event sequentially; and

memory means for storing the processed discrete events.

one time, and each of said processors having read and write access to at least one common memory;

at least one disk drive device communicating with a system bus through at least one I/O controller, said system bus further communicating with each of said plurality of processors and said at least one common memory;

run queue means coupled to said processors for holding a sequential list of segments to be processed;

process creation means operating on at least one of said processors for initiating new processes, each of said processes corresponding to a single segment of said billing and invoicing job; and

distributing means for distributing a plurality of discrete events into one of said plurality of segments.

28.   The computer system of claim 27 wherein for each segment, said processor processes each discrete event within said segment sequentially and wherein for each discrete event, said processor processes each independent sub-event of said discrete event sequentially and stores the processed discrete event.